The Configuration Database Command Shell

The Configuration Database Command Shell, **cdbsh**, utility is an enhanced Tool Command Language, Tcl, interpreter that has commands for communication with the CP configuration database. With the cdb extension, **cdbsh** can accept several subarguments. View the **man** pages for more detail.

The Configuration Database Replicator

The Configuration Database Replicator, **cdbreplicate**, utility replicates the contents of a configuration database on one host to a different configuration database on another host. The utility offers table and index exclusion and field replacement features. View the **man** pages for more details.

The Configuration Database Sanity Checker

The Configuration Database Sanity Checker, **cdbsc**, utility verifies the CP configuration database. Although the **cdbe** command line and the ApaConfig GUI perform rudimentary validation checks, use **cdbsc** to verify relationships between fields, records, and tables. View the **man** pages for more details.

Using Universal ASCII Lightning Format

Universal ASCII Lightning Format (UALF) is a generic ASCII format for lightning locations. The UALF is useful for manipulating position data and for using the data with other programs, such as spreadsheets.

UALF can be configured as a display format and sent to a CP serial port. CP includes filter processes, such as **dff_ascii**, that can also be used to format lightning location data as UALF.

All available information about a lightning location is presented in UALF. This includes parameters that may not be available because of sensor constraints. The values for these unavailable parameters will be displayed as 0.0.

For specific details about UALF, refer to the **man** page for **ualf**. The general specification for UALF follows:

- Fields in UALF are tab delimited.
- All fields are decimal numeric.

- Line width will vary because leading zeros are not included.
- The first field in the UALF is a version number.
- Field precision may change without a corresponding version change.
- Line termination is always with a carriage return and line feed.

Each UALF record consists of a series of numeric fields. The fields are separated by tab characters (0x09). Each record is delimited by carriage return (0x0D) and line feed (0x0A) characters.

There are two versions of the UALF. Version 0 contains basic information about LF locations. Version 1 expands version 0 by adding VHF specific information such as altitude. Version 1 is only available from the **dff_ascii** utility (**dff_ascii -ualf 1**) and from **amond**.

Table 35 below shows the fields of a UALF record based on the UALF version.

Table 35 UALF Record Fields

Field v 0 (LF)	Field v 1 (VHF)	Description	Acceptable Values
1	1	Zero or a positive integer denoting the UALF version number. Whenever fields are added or changed in the UALF, the version number will be incremented, allowing a client application to determine if it is capable of reading the given UALF record.	0, 1
	2	Network type (LF = 0, VHF = 1)	0, 1
2	3	The year, including the century.	1970 to 2032
3	4	Month. January = 1 to December = 12	1 to 12
4	5	Day of the month	1 to 31
5	6	Hour of the day. UTC is default. Use the TZ environment variable to set time to the local time zone.	0 to 23
6	7	Minute	0 to 59
7	8	Second	0 to 59
8	9	Nanosecond	0 to 999999999
9	10	Latitude of the calculated location in decimal degrees, to 4 decimal places	–90.0000 to 90.0000
10	11	Longitude of the calculated location in decimal degrees, to 4 decimal places	–180.0000 to 180.0000
	12	Altitude in meters	–4950 to +60535
11	13	Estimated peak current in kiloamperes (kA)	–9999 to 9999
	14	VHF RNP in dBm (0 if network type = LF)	–9999.0 to 9999.0
12	15	Multiplicity for flash data. Stroke data = 0	0 to 99
13	16	Number of sensors participating in the solution	2 to 99
14	17	Degrees of freedom when optimizing location	0 to 99

Table 35 UALF Record Fields (Continued)

Field v 0 (LF)	Field v 1 (VHF)	Description	Acceptable Values
15 [1]	18 [1]	Ellipse angle as a clockwise bearing from 0 degrees North	0 to 180.0
16 [1]	19 [1]	Length of semi-major axis of ellipse in kilometers (km)	0 to 50.0
17 [1]	20 [1]	Length of semi-minor axis of ellipse in kilometers (km)	0 to 50.0
18	21	Chi-square value from location optimization	0 to 999.99
19	22	Rise time of the waveform in microseconds	0 to 99.9
20	23	Peak-to-zero time of the waveform in microseconds	0 to 999.9
21	24	Maximum rate-of-rise of the waveform in kA/µsec	0 to 999.9
22	25	Cloud indicator. Cloud discharge = 1, Cloud-to-ground discharge = 0	0, 1
23	26	Angle indicator. Sensor angle data used to compute position. 1 = Yes, 0 = No	0, 1
24	27	Signal indicator. Sensor signal data used to compute position. 1 = Yes, 0 = No	0, 1
25	28	Timing indicator. Sensor timing data used to compute position. 1 = Yes, 0 = No	0, 1

1) Fields 15, 16, and 17 (18, 19, and 20) together specify a confidence ellipse measuring a 50th percentile confidence region around the given latitude/longitude location.

Multicasting

Sometimes it is beneficial to connect more than two processes into what is termed a multicast connection. When processes are multicast, every message sent by each process will be seen by all of the other processes that are connected. Note that the messages sent are not seen by the sending process, just the receiving processes.

Multicasting on a Local Workstation

To multicast processes on a single workstation, use the **smq://** command.

Example:

Open three or more **Terminal** windows on a single workstation. Enter the following command in each window:

```
attach -charterm -attach smq:///home
```